The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A drive unit for a compressor having a motor ~~(6)~~, the drive unit comprising:

a detecting component configured and arranged to detect at least one of ~~means (16, 17) for detecting the~~ a current of said motor and~~/or~~ a voltage of said motor ~~(6)~~; and

a prediction component configured and arranged to predict ~~means (28) for predicting~~ an internal condition based on detection values obtained by said detecting ~~means (16, 17)~~ component.

2. (Currently Amended) The drive unit ~~for a compressor~~ according to claim 1, wherein

the prediction component ~~means (28)~~ has an identification component ~~means (20)~~ for identifying a parameter of a motor model from the detection values obtained by the detecting component ~~means (16, 17)~~, and a derivation component ~~means (21)~~ for deriving ~~the~~ internal condition based on the parameter identified by said identification component ~~means (20)~~.

3. (Currently Amended) The drive unit ~~for a compressor~~ according to claim 1, wherein

the internal condition predicted by the prediction component ~~means (28)~~ is shaft abnormalities or poor lubrication.

4. (Currently Amended) The drive unit ~~for a compressor~~ according to claim 1, wherein

the internal condition predicted by the prediction component ~~means (28)~~ is motor temperature.

5. (Currently Amended) The drive unit ~~for a compressor~~ according to claim 1, wherein

the motor ~~(6)~~ is a brushless DC motor.

6. (Currently Amended) A refrigerator comprising: ~~having~~

a refrigerant circuit provided with a compressor ~~(1)~~ including a motor; ~~(6), the refrigerator comprising:~~

a detecting component configured and arranged to detect at least one of ~~means (16, 17) for detecting the~~ a current of said motor and/~~or~~ a voltage of said motor ~~(6)~~; and

a prediction component configured and arranged to predict ~~means (28) for predicting~~ an internal condition of the compressor ~~(1)~~ based on detection values obtained by said detecting ~~means (16, 17)~~ component.

7. (Currently Amended) The refrigerator according to claim 6, wherein

said prediction component ~~means~~ ~~(28)~~ has an identification component ~~means~~ ~~(20)~~ for identifying a parameter of a motor model from the detection values obtained by the detecting component ~~means~~ ~~(16, 17)~~, and a derivation component ~~means~~ ~~(21)~~ for deriving the internal condition of the compressor ~~(1)~~ based on the parameter identified by the identification component ~~means~~ ~~(20)~~.

8. (Currently Amended) The refrigerator according to claim 6, wherein

said motor ~~(6)~~ is a brushless DC motor.

9. (Currently Amended) The refrigerator according to claim 7, wherein

the parameter identified by said identification component ~~means~~ ~~(20)~~ is motor driving torque.

10. (Currently Amended) The refrigerator according to claim 6, wherein

the internal condition predicted by said prediction component ~~means~~ ~~(28)~~ is the high refrigerant pressure or low refrigerant pressure of the refrigerant circuit.

11. (Currently Amended) The refrigerator according to claim 9, wherein said refrigerant circuit is provided with a refrigerant detecting means ~~(22, 23)~~ for detecting a refrigerant state, and

~~wherein~~ said derivation component ~~means~~ ~~(21)~~ ~~derives~~ being configured to derive the high refrigerant pressure or low refrigerant pressure of the refrigerant circuit based on the motor driving torque identified by the identification component ~~means~~ ~~(20)~~ and the refrigerant state detected by the refrigerant detecting component ~~means~~ ~~(22, 23)~~.

12. (Currently Amended) The refrigerator according to claim 9, wherein said refrigerant circuit is provided with ~~the~~ a refrigerant detecting component ~~means~~ ~~(22, 23)~~ for detecting a refrigerant state, and

~~wherein~~ the derivation means ~~(21)~~ is formed such that the relationship between motor driving torque corresponding to ~~the~~ at least one of a refrigerant temperature and~~/or~~ a refrigerant pressure of the refrigerant circuit and the degree of suction superheat of the compressor ~~(1)~~ is set beforehand and such that the degree of suction superheat of the compressor ~~(1)~~ is derived based on the motor driving torque identified by the identification means ~~(20)~~ and the refrigerant state detected by the refrigerant detecting component ~~means~~ ~~(22, 23)~~.

13. (Currently Amended) The refrigerator according to claim 6, wherein the internal condition predicted by the prediction component ~~means~~ ~~(28)~~ is occurrence of an impact load within the compressor ~~(1)~~.

14. (Currently Amended) The refrigerator according to claim 13, wherein the detection value obtained by the detecting component ~~means~~ ~~(16)~~ is the current of the motor ~~(6)~~, and

~~wherein~~ the prediction component ~~means~~ ~~(28)~~ predicts occurrence of an impact load from the higher harmonic component of the detection current obtained by the detecting component ~~means~~ ~~(16)~~.

15. (Currently Amended) The refrigerator according to claim 14, wherein the prediction component ~~means (28)~~ predicts occurrence of an impact load from the amount of distortion in the sine wave of the higher harmonic component of the detection current.

16. (Currently Amended) The refrigerator according to claim 14, wherein the prediction component ~~means (28)~~ predicts occurrence of an impact load when the higher harmonic component of the detection current is greater than a preset reference value.

17. (Currently Amended) The refrigerator according to claim 16, wherein the reference value for the prediction component ~~means (28)~~ is set in accordance with at least one of the refrigerant temperature and/or refrigerant pressure of the refrigerant circuit.

18. (Currently Amended) The refrigerator according to claim 6, wherein the internal condition predicted by the prediction component ~~means (28)~~ is poor lubrication or liquid compression in the compressor ~~(1)~~.

19. (Currently Amended) The refrigerator according to claim 18, wherein the detection value obtained by the detecting component ~~means (16)~~ is the current of the motor ~~(6)~~, and

~~wherein~~ the prediction component ~~means (28)~~ predicts the poor lubrication or liquid compression of the compressor ~~(1)~~, based on the increasing rate of the detection current obtained by the detecting component ~~means (16)~~.

20. (Currently Amended) The refrigerator according to claim 19, wherein the refrigerant circuit is equipped with a refrigerant detecting component ~~means (22, 23)~~ for detecting a refrigerant state, and

~~wherein~~ the prediction component ~~means (28)~~ is formed such that a stationary current for the motor ~~(6)~~ in its steady state is set based on the detection current detected by the

detecting component ~~means (16)~~ and based on the refrigerant state detected by the refrigerant detecting component ~~means (22, 23)~~ and such that the poor lubrication or liquid compression of the compressor ~~(1)~~ is predicted by making a comparison between said stationary current and the detection current detected by the detecting component ~~means (16)~~.

21. (Currently Amended) The refrigerator according to claim 9, wherein the prediction component ~~means (28)~~ predicts poor lubrication or liquid compression in the compressor ~~(1)~~ based on an increase in motor driving torque which exceeds a specified value.

22. (Currently Amended) The refrigerator according to claim 21, wherein the refrigerant circuit is equipped with a refrigerant detecting component ~~means (22, 23)~~ for detecting a refrigerant state, and

~~wherein~~ the prediction component ~~means (28)~~ is formed such that a stationary torque for the motor ~~(6)~~ in its steady state is set based on the motor driving torque identified by the identification component ~~means (20)~~ and based on the refrigerant state detected by the refrigerant detecting component ~~means (22, 23)~~ and such that the poor lubrication or liquid compression of the compressor ~~(1)~~ is predicted by making a comparison between said stationary torque and the motor driving torque identified by the identification component ~~means (20)~~.

23. (Currently Amended) The refrigerator according to claim 9, wherein the prediction component ~~means (28)~~ outputs information on the internal condition of the compressor ~~(1)~~ which has been predicted.

24. (Currently Amended) The refrigerator according to claim 9, further comprising:

a protection ~~means (29) for~~ configured and arranged to protect~~ing~~ the compressor ~~(1)~~ based on information on the internal condition of the compressor ~~(1)~~ predicted by the prediction component ~~means (28)~~.

25. (Currently Amended) The refrigerator according to claim 24, wherein the protection component ~~means~~ ~~(29)~~ controls an inverter controlling component ~~means~~ (26) for driving the compressor ~~(1)~~ to perform a protective operation of the compressor ~~(1)~~.

26. (Currently Amended) The refrigerator according to claim 25, wherein the protection component ~~means~~ ~~(29)~~ controls the inverter controlling component ~~means~~ ~~(26)~~ to perform the protective operation of the compressor ~~(1)~~ in preference to operation control of the refrigerant circuit.

27. (Currently Amended) The refrigerator according to claim 24, further comprising:

a switching component ~~means~~ for switching from the protective operation of the protection component ~~means~~ ~~(29)~~ to a steady operation, based on the information on the internal condition of the compressor ~~(1)~~ which has been predicted by the prediction component ~~means~~ ~~(28)~~.

28. (Currently Amended) The refrigerator according to claim 24, wherein the protection component ~~means~~ ~~(29)~~ makes a failure diagnosis on the compressor ~~1~~.

29. (Currently Amended) The refrigerator according to claim 28, further comprising:

a memory component ~~means~~ ~~(21)~~ for memorizing the result of the diagnosis made by the protection component ~~means~~ ~~(29)~~.

30. (Currently Amended) The refrigerator according to claim 24, wherein the protection component ~~means~~ ~~(29)~~ is so formed as to forecast a failure in the compressor ~~(1)~~.

31. (Currently Amended) The refrigerator according to claim 30, further comprising:

a communication component ~~means~~ (31) for outputting information on the forecast made by the protection component ~~means~~ ~~(29)~~.

32. (Currently Amended) The refrigerator according to claim 24, wherein the protection component ~~means~~ ~~(29)~~ is so formed as to alter the control content or control parameter of the refrigerant circuit.

33. (Currently Amended) The refrigerator according to claim 6, wherein a refrigerant system model for the refrigerant circuit is provided beforehand, and the operating condition of the refrigerant circuit is predicted based on information on the internal condition of the compressor ~~(1)~~ predicted by the prediction component ~~means~~ ~~(28)~~.

34. (Currently Amended) The refrigerator according to claim 7, wherein the motor ~~(6)~~ is a brushless DC motor, and

~~wherein~~ the prediction component ~~means~~ ~~(28)~~ predicts a motor temperature from the current and voltage of the motor ~~(6)~~ and instrument constants.

35. (Currently Amended) The refrigerator according to claim 7, wherein the motor ~~(6)~~ is a brushless DC motor,

~~wherein~~ the identification means ~~(20)~~ identifies a parameter based on a motor model constituted by the current and voltage of the motor ~~(6)~~, resistance and inductance, and

~~wherein~~ the derivation component ~~means~~ ~~(21)~~ derives motor temperature based on the parameter identified by the identification component ~~means~~ ~~(20)~~.

36. (Currently Amended) The refrigerator according to claim 35, wherein the identification component ~~means~~ ~~(20)~~ obtains a motor voltage equation in such a way that a d-axis is plotted in the direction of the N pole of magnets ~~(1b)~~ of the motor ~~(6)~~, a q-axis is plotted in the direction which is shifted forward from the d-axis by $\pi/2$, and a motor

basic voltage equation for a three-phase PMSM is converted into a d, q axis coordinate system which rotates at an electric angular speed ω, and the identification component ~~means (20)~~ then identifies a magnetic flux characteristic value associated with an armature flux linkage generated by the magnets ~~(1b)~~, using said motor voltage equation, and

~~wherein~~ the derivation component ~~means (21)~~ derives the temperature of the magnets ~~(1b)~~ as motor temperature based on the magnetic flux characteristic value identified by the identification component ~~means (20)~~.

37. (Currently Amended) The refrigerator according to claim 36, wherein the identification component ~~means (20)~~ obtains a voltage equation for a steady state from the motor voltage equation, and at the time of the identification, the d-axis component of the armature current of said steady-state voltage equation is set to zero.

38. (Currently Amended) The refrigerator according to claim 35, wherein the refrigerant circuit has a refrigerant detecting component ~~means (24)~~ for detecting the temperature of a discharge pipe of the compressor ~~(1)~~, and

~~wherein~~ a calibration component ~~means (36) is~~ being configured such that the motor temperature derived by the derivation component ~~means (21)~~ being regarded as the internal temperature of the compressor 1, the internal temperature derived by the derivation component ~~means (21)~~ is calibrated based on the discharge pipe temperature detected by the temperature detecting component ~~means (24)~~.